Pre-germinated single bud setts: a way to improve ecological resilience at planting

POSER C[1], CHABANNE A[2], MARTIN J[1], GUENO JM[2], RIBOTTE C[2], TUMOINE L[2], LE BRAS J[2], CHRISTINA M[2],GOEBEL FR[1]

[1] *Cirad UPR AÏDA, Avenue Agropolis, F-34398 Montpellier Cedex 5, France*

[2] *Cirad UPR AÏDA, F-97494 Saint Denis Messagerie Cedex9, La Réunion, France*

E-mail: poser@cirad.fr

1- Planting is a major issue in sugarcane

- Plant cane impacts on successive ratoons
- A good germination reduce weed pressure and herbicide use
- Gap filling is time consuming and expensive
- Sugarcane setts should be healthy
- Planting sugarcane in mulch is challenging

Pre-germinated single bud setts in pots in dual row plantation (Bassin-Plat Cirad experiment station - Reunion Island)

2- Pre-germinated single buds transplanted compared to traditional planting

➢ On a 3 month mulch (7.4 t/ha dry matter)

3 month cultivation of *Crotalaria juncea* before fine mechanical gyro-grinding - Hole digging with mechanical auger before transplantation.

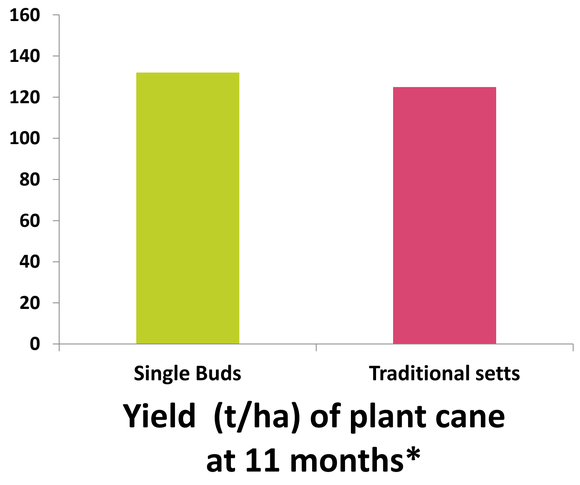
➢ On a 7 month mulch (11 t/ha dry matter)

3 month cultivation of *Avena sativa* followed by 4 month cultivation of a mixture of *Crotalaria juncea* and *Mucuna pruriens* before coarse gyro-grinding for mulching.

Results on plant cane :

- 80 % economy of setts
- No yield reduction
- Same number of nodes/stalk
- Higher stalk number for single buds compared to traditional planting (8%)
- Good bud multiplication ratio of 1:99

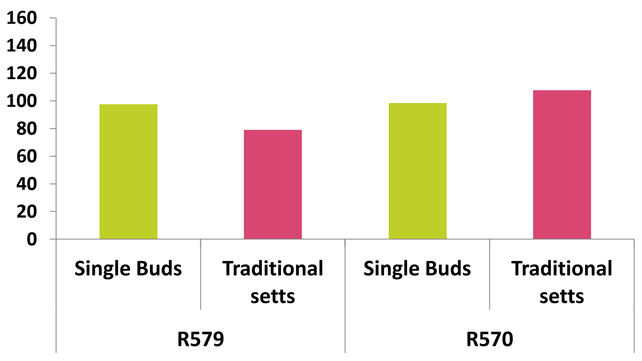
From one bud to one stool after 11 months



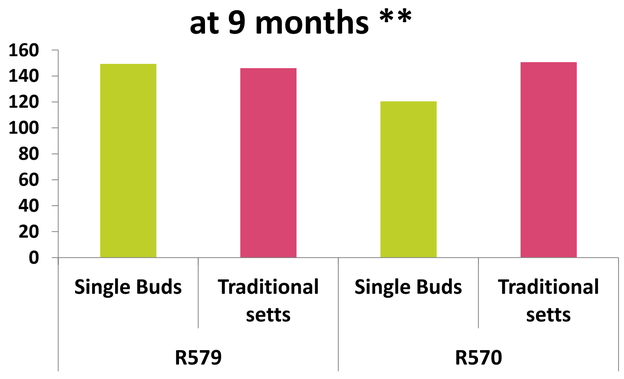
Yield (t/ha) of plant cane at 11 months*

* Experiment based on two measurements of 10 linear meters for each treatment

- No yield reduction in plant cane and ratoons
- A reduction in herbicide use is possible



Yield t/ha of Plant cane at 9 months **



Yield t/ha of 1st ratoon at 12 months **

Transplantation in much

** Experiment based on 285 m² plots for each treatment.
Dual rows : 1.4 x 0.5 m
Single sett spacing : 0.5 m.

3- Many advantages of the technique

- Soil tillage reduction
- Water retention, erosion limitation, functional biodiversity
- Full and homogeneous germination
- Saving of bud setts to be planted
- Less or no use of herbicides

4- Further improvements

Mechanical planting test without mulch

- Mechanical transplanting techniques in efficient mulch
- Reduce labor cost by optimizing mechanization
- Complementary nutrients in pot
- Acclimatization of young plants before transplantation

References:

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